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AMERICAN
GAS JOURNAL
Established 1859 Pioneer of the Gas Industry

VOL. 181, No. 20
WHOLE NO. 3684
NEW YORK, SATURDAY, NOVEMBER 15, 1924
Subscription $3 Per Year
$4 Canada $6 Foreign

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Index to Contents, Page 4
Advertising Index, Page 33

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AMERICAN
GAS JOURNAL

Vol. 121. No. 24 NEW YORK, NOVEMBER 15, 1924 Whole No. 3494

Fuel of the Future. What Shall It Be?

XV. The heat treatment of metals—The economic aspect

Ismar Ginsberg

THE fourteen articles of this series, which have appeared in the columns of the American Gas Journal over a period of more than one year, have been concerned with the fundamental principles on which industrial gas business is built. They have taken up in detail all the various phases of the industrial gas business, the technical, the economic, the merchandising and the general industrial aspects and were written with the intent and purpose to prepare the way for the discussion of the individual applications of gas as an industrial fuel. Thus the underlying principles of combustion, the calculations involving the determination of the volume of flue gases obtained, the amount of air required for complete combustion, the flame temperature, etc., have been discussed in detail. The industrial aspect of the fuel business of the country has been discussed as well, and the economic importance of gas as an industrial fuel has been pointed out. The argument has been developed to show that gas possesses all the characteristics and requirements of an industrial fuel, applicable universally, and in addition certain other advantages that the other competitive do not possess. A digression dealt with the use of gas in house heating, which, strictly speaking, is not an industrial application of the fuel, but which is generally included in the industrial category. Finally, in the last of the articles, mentioned above, the characteristics of the various gaseous fuels were discussed, and their general applicability and availability as industrial fuel were studied. The merchandising aspect of the industrial gas business was not neglected and attention was given to the fundamentals involved in the sale of gas as an industrial fuel. The last article of this series dealt with the very important subject of the evaluation of the heat value of a fuel, and the relation between the heat units concentrated in the original gas, the flame temperature, the rate of flame propagation and the real value of the gas as a fuel. It was pointed out therein that there was quite a difference between the quality of a gas and the quantity of heat units that it contains.

The Application of the Principles

We are now ready to take up in detail each individual application of gas as an industrial fuel. In studying these various industrial uses of gas, the principles which were outlined and discussed in the first fourteen articles of this series will be applied. Each individual use of gas for an industrial purpose will be considered from all the various aspects of the situation. Not only will the technical end be considered, but the general industrial, the economic and the merchandising ends as well. In this way each application will be discussed as a unit and, separate from any other, with the purpose of making a complete study of each subject.

Gas in Heat Treatment of Metals

The first field that has been selected for study is that very wide branch of the metallurgical industry known as the heat treatment of metals. There were several reasons which led to the choice of this field. In the first place, gas has not been received with such enthusiasm in this field as in others and mainly so because gas men have not made as great efforts to obtain this kind of industrial business as in some other cases, as, for example. the bread-baking industry and the like. Then, again, in this field the cost of fuel is relatively unimportant. The economies that are effected in other ways than by a reduction of the mere cost of the fuel are what count. In the heat treatment of metals it is relatively easy to injure the product or destroy it altogether, and it is far more important to avoid this

happening than to save a few cents on the cost of the fuel. In fact, the cost of the fuel is scarcely considered at all by the manufacturer. What he is most interested in is to secure a product of the best quality, and if he has to pay a little more for his fuel in order to do this, he is perfectly content, for the spoiling of a few articles a day in the heat treating process will more than offset most any greater cost entailed in using a more expensive fuel.

This is the reason why electricity has been so popular among the plants that heat treat metals, altogether it is by far and large the most expensive of all industrial fuels. But it possesses advantages that make the manufacturer feel justified in using it although it costs more than any of the other fuels at his disposal. He has used it in preference to gas because he has been educated to know and appreciate the wonders of electricity. The gas man has been timid to enter this field for fear that his fuel will be too expensive in comparison with such combustibles as coal and oil, and also in certain cases because he has believed that the electrical industry has had the business tied up so thoroughly that he could not make any progress in it.

The Price of Fuel Unimportant

The first reason is insignificant. The price of the fuel does not count in this industry as much as it does in others. Gas is cheaper than electricity and yet a large number of manufacturers will prefer to use the latter. They have not been approached in the proper manner and made to understand that gas will do everything that electricity will in the heat treatment of metals and at a lower cost. In fact. those who have made a study of this matter have come to the conclusion that when gas is used in a properly constructed furnace the economy effected is considerably greater than in the case of electricity. In fact, there is no justification for the position taken by the electric industry in advocating electricity as an industrial fuel from the economical standpoint.

For example, electricity is produced from coal with an efficiency of about 10 per cent. Even in the more up-to-date plants the highest efficiency obtainable in the manufacture of electricity is from 17 to 20 per cent. This, then, means that from 80 to 90 per cent of the heat energy in coal is lost in its conversion into electrical energy. This inefficiency can only mean one thing, an abnormally high fuel cost when electricity is used as an industrial fuel.

Gas Is Far More Economical

On the other hand, when gas is made from coal, the efficiencies range from 55 to 90 per cent, based on the original heat values concentrated in the coal. There is, thus, really no comparison between the relative efficiency of gas and electricity manufacture. When electricity costs 2 cents per kilowatt hour, the cost per million British Thermal Units in the original coal is $6, which means that when gas is sold on the basis of $1 per thousand cubic feet, the cost on a million British Thermal Units in the original coal is only $1.75. This simply means that the cost of gas is less than one-third of the cost of electricity on the basis of the original heat in the coal.

The question then naturally arises, why has not gas been employed in the place of electricity for this purpose, when its cost is so much less than that of electricity, and particularly when gas possesses all the advantages of electricity as an industrial fuel in this special field. The real reason for this lack of progress on the part of gas in this lucrative field is that the gas furnace was not so far developed as the electric furnace and the manufacturers were not only sold on electricity, but, what is more important, were educated to believe in electricity as the proper fuel for this purpose, no matter what its cost might be. In other words, the idea of cost was entirely removed from their minds. What concerned them was the performance of the heating agent and the saving effected by the great reduction in spoilage of the products in course of heat treatment.

Gas and Other Fuels in This Field

Therefore, inasmuch as gas possesses all the advantages that electricity does for this particular purpose, and inasmuch as the cost of the fuel is no object, there is no reason why gas cannot supplant electricity in the heat treatment of metals. It is cheaper and will give the same good results. This should be enough sales argument to make it possible for gas to outsell electricity. It will be sufficient if the gas man takes this matter to heart and makes a real effort to educate the manufacturer so that he will see distinct economic advantages in the use of gas as an industrial fuel without incurring any danger of sacrificing any of the advantages that are gained by the use of electricity. Gas-fired furnaces have now been developed to a high state of perfection and the manufacturing companies who specialize in this field have given the matter considerable attention and are ready to make any furnace for any special purpose in this field. It remains for the gas man himself to be sold on the inherent advantages of his fuel for this purpose over all other fuels. Experiments have shown that it has been possible to make a gas radiant element which is constructed of a special high temperature resisting alloy, which is heated by the products of combustion obtained from the burning of gas instead of electricity. The radiant heat thus obtained accomplishes the same results that have been obtained with electricity, and at the same time effects economies which are unquestionably of interest to the manufacturer in this field. By applying the principles of heat recuperation, it is possible to operate the gas-fired furnace of this type at less than

(Continued on page 1189)

More Signs of Improvements

Foreign Agricultural markets important factors---No inflation indicated

L. W. Alwyn-Schmidt

SIGNS multiply that the recent improvement in the general situation of the market is not merely a passing flurry, but is caused by a nation-wide buying movement, which will become stronger as the season progresses. This supports our original contention that the depression of last spring and summer would be of short duration only, and that it would end as soon as the farmer would be able to spend more freely than he had during the past ten months or so.

Notwithstanding our comparatively large exports, America is not an export country. Unlike European countries, we have failed to build up regular export markets upon which we can rely in case of a failure of our own market. There exists no foreign safety valve, to let out an industrial surplus if the pressure of merchandise gets too great in the domestic market. As the result, our domestic manufacturer stands and falls with a market which, unfortunately, is governed by factors of which he has himself little or no control.

Importance of a Foreign Market

In fact, the domestic industrial prosperity for our non-exporting industrial producer depends upon the chance of his consumer finding a well-paying foreign market for the products of his labor. Hence American industry will do well if good prices can be obtained abroad for American foodstuffs and if the export movement of foodstuffs is large. Certainly a peculiar situation for a nation that ranks first among the industrial producers of the world.

But it explains why the settlement of Europe's economic difficulties resulting from the adoption of the Dawes Plan has such a significance for this country. Europe, and especially Germany, will now buy more freely such agricultural products as we can offer, foodstuffs and raw materials. By doing so it will provide that surplus demand for these articles which is necessary to create a price balance, high enough to pay the grower for his work and monetary outlay.

Agricultural production will be more profitable and the profits will be spent to buy the industrial products of our country. These purchases bring work to the American wage-earner who, in turn, will increase his own purchases, giving another turn to the wheel and getting into normal operation the machinery of national prosperity.

Time Required for Development

Naturally, action and counteraction, cause and result, require time to develop. Advancing prices of wheat and other agricultural products already point the way. But rising prices alone do not lead to increased purchasing power. It is up to the banks, by setting in motion the necessary credit machinery, to make effective the benefits of higher agricultural earnings. The agricultural credit situation, therefore, will be closely related to the rural purchasing ability during the next few months.

Luckily for everybody concerned, the banks have followed a very careful credit policy all through the year. By doing so they are now able to take up the "slack" in the produce movement and to finance not only the farmer's seeding requirements of the coming year, but, what is more important, his immediate purchases. The rising prices for agricultural produce in this manner have not strained the flow of credit, which might easily have been the result, but, on the contrary, will help to increase the purchasing capacity of the nation.

The Merchandising Policy of the Retailer

That this increase in purchasing power has not resulted in a sudden pressure of orders upon our manufacturers has its cause in a peculiar change in the merchandising policy of the retailer. There was a time when the salesman was the largest factor in American distribution. He still holds a very enviable position, but his abilities are now matched against those of the professional buyer and the merchandising man. If the recent depression has taught any lesson, it was that the store carrying least overweight in the way of surplus stock is best able to resist economic pressure. Contrary to former experience, the retail trade has come out well this year, and this is due entirely to the conservative merchandising methods adopted by most retailers. Keen observers have pointed out that the practice of placing small orders, often repeated and greatly diversified, will be characteristic of future retail buying. It has been found to be more pliable, less risky and more easy to finance than the former policy of making large contracts upon long-term deliveries.

Manufacturers who were first puzzled by this new development have, in the meantime, adjusted themselves to it, finding that it has also many advantages from their point of view. The principal one is the practical total absence of cancellations. If the loss resulting to manufacturers and jobbers from this source alone is considered, the gain resulting from this change in merchandising methods will be apparent. Another is the lessening of the credit risk, as merchants have been able to make payments regularly all through the tight period, with a noticeable decline in commercial mortality.

(Continued on page 1188)

Every Season Is Gas Range Season

A little reflection will prove the assertion

J. B. Dillon

DARWIN said: "Men differ less in capacity than in their determination to use the powers they have."

It makes no difference whether or not we believe in Darwin's theory of evolution, we must agree, to a large extent, that there is food for thought in the few words quoted.

We have the capacity to look, think and act, but do we do it as we should?

Too many are prone to look at the dark side of things, to believe that it is all gloomy, and then to conclude that disaster is bound to ensue.

Our actions should be the reverse of this, for surely there are many successful merchants now who, when gloom threatened, would have quit if they had not decided to use their ability to cast aside all enervating thoughts, if they had not buckled on the armor of determination and won the fight, which is just why they become successful merchants.

What Is a Successful Merchant?

Any man or woman who conducts a business, selling honest goods in an honest way, and who is making as good a living in that business as they could elsewhere, that is, by working for somebody else, is a success.

Because the "other fellow" makes more money than we do should not cause any sorrow or distress, but it should create in us a desire to try and find out how he does it, for "it is a wise man who profits by the experience of others."

An Experience

Only a short time ago I overheard a conversation between two men. One was the local dealer in trees, shrubs, etc., the other was the owner of a new home.

The florist came to sell him trees, shrubs, etc., but the owner said: "You are too late, I bought all from ———."

"That's strange, how that fellow beat me to it. He represents an out-of-town concern!"

Right there I decided to ascertain the facts. Hunting up the salesman, I discussed the particular case with him, without mentioning the name of the losing dealer, and here is what he said:

"Why, I watch the building permits, visit the place the moment the building is started, and solicit the business. I know that the goods we sell are always as represented and I can get any number of local references, and that is how I get the business."

Now I know that any first-class gas range is as represented, and often much better than represented; therefore, we can do like the salesman who won.

Yes, we can; but it is best to call the same day the building permit is published, recalling the story of the early bird and the worm.

Present Conditions

I believe—my own observations as authority for the statement—that most all residences when built within the confines of the city limits are being built over a full basement, the house to be heated with a furnace of some pattern.

If the party does not want gas heating, he or she, will certainly want a gas range when we explain the wonderful work the gas range does. We must always emphasize that there is no need to carry coal, ashes, or split kindling, that the cost and time to operate is always less than that for a coal stove, and that the results are always in favor of the gas range because of its simplicity and superior work. Never decide that everybody knows all of this. Tell it all, and be enthused while you are reciting it, for it is worthy of being enthused over. Go into its cleanliness, how soon it heats up and cools down, so that when summer time comes the house is never over-heated by the gas range; that the range will heat the room during the winter time and that all cooking may be done without unduly heating the house. You cannot exaggerate the good qualities of a gas range if you adhere to the truth, and that is why every season is gas range season.

Some Sales Ideas

Thanksgiving will soon be with us, and the majority of the folks will want a turkey. Nobody can consistently dispute that the greatest place to roast a turkey is in an oven heated by gas, because the heat can be so admirably adjusted. That is what the roasting of a turkey requires, hence we should not be satisfied to feel that the peak of the business is over because the summer has passed, but to decide that there is always a market for gas ranges where the supply of gas is dependable, and that means everywhere where artificial gas is distributed.

Advertising Card Copy and a Turkey

We should prepare some advertising copy for the local newspapers, show window and store. It is always best to use the newspapers in conjunction with card signs, because only those who visit the store will see the signs unless they appear in the newspapers.

(Continued on page 1188)

Making the Public Think About It *

The details of a comprehensive advertising plan

N. B. Drury

Chairman of Committee

IT IS to make the public think about their products or their services, to enable them to discriminate between the good and the bad, and to educate them to the use of new applications of old principles—that many industries today are uniting in general co-operative advertising campaigns.

It is on the same principle that the Advertising Bureau of the Commercial Section, Pacific Coast Gas Association, proposes the plan of action which follows—a plan to concentrate and co-ordinate the efforts, along advertising lines, of the various units making up the association.

The Need for a Co-operative Advertising Campaign by the Pacific Coast Gas Industry

Every industry advertises. The most potent of all advertising—word of mouth advertising—is going on continuously and incessantly for or against every organization which in any way comes in contact with the public. The question is whether this advertising is to be haphazard and dependent upon current misconceptions carelessly acquired, or whether it is to be directed, by presentation through the proper channels in the proper sequence, of a fundamental, complete and clear-cut statement of the facts about the industry and its relation to the public.

The Need for Public Understanding

The closer an industry's relation to the public, the more necessary a course of action that will assure public understanding and appreciation. All about us are examples, not only of individual concerns, but of entire industries which, recognizing the modern trend, have made sure through adequate advertising that the public understand their products, their methods, and their aims. There is a great variety of interests now represented regularly in the advertising columns whose aim is either to widen the market for a certain type of product or service, or to hold a market already won and give it greater stability. Thus we see the growers and distributors of coffee joining to induce through advertising its acceptance as the universal drink; the lumbermen uniting to keep the people informed about the proper uses of wood; the makers of laundry machinery to have us "send it to the laundry"; the florists to make us "say it with flowers"; and the jewelers to have us invest in "gifts that last."

The Weakness of Gas

The gas industry, mainly because it is so old and so widespread, has naturally been less inclined toward such an exposition to the public than the newer and less accepted industries to whom the short cut of advertising was essential. However, in that very position has been an element of weakness. Resting on the assumption that everyone knows the advantages of gas, the industry has in many quarters failed to keep the public informed as to the many advances and developments, particularly in the matter of perfecting appliances, whereby this clean, economical, convenient fuel can be more efficiently employed. Moreover, current misconceptions about gas—accentuated by "scare head" journalism—have given the public distorted views and a half knowledge that is no better than none at all. It may be true that the public in general know about gas, but it is also true that they do not sufficiently think about it.

Gas Faces Competition

The result has been that while the older and more cumbersome and less convenient forms of fuel are being steadily displaced, gas, which logically should take their place because of its convenience and availability, has by no means dominated the situation without competition. In the heating field gas has found itself face to face with the stiffest sort of competition from a variety of fuels, and we are informed by those who are in close touch with the situation that even in the field of cooking, where we are accustomed to think of it as practically universal, gas at the present time is no more than holding its own. All of this has been largely due to the fact that there has been no consistent, concerted plan for getting the facts before the public on the subject of superiority of gas as fuel.

There is only one way in which to bring about this transformation. It is the education of the public, and the education of the public can most quickly and effectively be accomplished through the medium of properly directed advertising.

The Purpose of the Advertising Campaign

The Advertising Bureau therefore proposes that the time has come for the gas industry of the Pacific Coast, acting as a unit, to formulate and carry on a systematic advertising campaign, the general purpose of which is to broaden the uses of gas by, first, impressing upon the public the supremacy of gas as fuel in certain definite fields; second, educating the public to the varied uses of gas, many of which are now unknown to the great majority; third, telling the public of the size, importance, scope and dependability of the gas industry and how its various elements are now organized; and fourth, overcoming through a carefully worked-out educational campaign the popular misconceptions and the distorted views gained by the public regarding gas.

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*Presented at the 1924 Convention of the Pacific Coast Gas Association.

Standardization an Aim

In other words, the gas industry of the Pacific Coast has a message to deliver to the public somewhat along these lines: "Gas is the essence of heat. Where heat is wanted it is the ideal fuel—the cleanest, the most convenient, the most economical, and the safest and most healthful when burned in appliances that have been properly manufactured and installed."

After the general purpose—to get the public to appreciate the less sensational but more fundamental facts relating to the gas industry—the incidental purpose, perhaps equally important, is, using this general campaign as a central rallying point and an expression of common faith, to unite the industry of the Coast in all its elements (the gas companies, the manufacturers of appliances, the distributors and agents and the local appliance dealers)—by the establishment of certain standards in respect to manufacture, service and merchandising throughout the field of the industry. There should result from this the creation in the industry of a broader conception of the industry's purpose and a more definite code of standards in workmanship and service and thus the promotion of a spirit that reaches throughout the industry and affects every phase of public relations. Moreover, there should result a development of more effective advertising and merchandising methods among the local gas companies and appliance concerns, particularly in the smaller communities.

For one of the elements of the general plan of campaign here suggested would be a more thorough guidance of smaller local concerns in the planning and execution of their advertising through the formation of an advertising bureau later to be described.

Scope of the Campaign

Such a plan of general advertising would take in every branch of the gas industry and every community in the Pacific Coast territory. It would be directed primarily to householders in these communities, with the idea in mind that later in the development of the plan a special campaign to increase the industrial use of gas and gas equipment would logically follow. There should also be kept in mind the need of devising some means of reaching particular groups such as architects, contractors, apartment owners, etc., who control to a considerable extent determination of heating methods.

In the opinion of the committee, the aims already outlined can be accomplished best through a sustained campaign of paid advertising.

At this point it would be well to consider one question, namely, the distinction between publicity and advertising as it relates to the coastwide gas industry. In reaching many of the objectives already outlined, aid can undoubtedly be secured from the well organized publicity effort now being carried on by the association. There is a close interrelation between this publicity and the advertising plan proposed. Particularly on the institutional side it is urged that the systematic advertising effort be supplemented by equally thorough and systematic general publicity.

The First Step—A Complete Survey

It is recommended that as the first step the association begin at once a systematic and thoroughgoing survey of the entire field to determine the conditions upon which a successful advertising plan must be built. Among these are (1) the state of mind of the public; (2) the facts to be presented; and (3) the attitude of the industry. When through such a survey it has been determined just what elements in the population are to be reached and just what messages are to be delivered to them, we can finally determine what type of advertising would be most effective and what media should be used.

Possible Media

Included in the survey will be a study of the best means of reaching all potential prospects in the Pacific Coast territory. Choice of media will be determined by conditions as found in different parts of the territory covered. The backbone of any campaign of this sort will undoubtedly be a carefully worked out series of display advertisements in local newspapers, and possibly also in periodicals, using space large enough to be in keeping with the import of the messages. Direct mail advertising will also be employed in various ways, one of the most obvious methods being the reproduction of the advertising messages in various forms to be furnished in large quantities to all members of the association for general distribution. There should be some sort of basic booklet which will be a guide to the proper use of gas and gas appliances. As a matter of fact, the Home Service Bureau, Commercial Section, is already preparing data for a booklet which can be used for this purpose. This publication would be devoted entirely to the household use of gas, but ultimately a second publication dealing with industrial uses of gas would also be needed. This will be based on the work now being done by the Industrial Bureau, Commercial Section. The various service manuals issued by the American Gas Association offer the pattern for a booklet for householders. Booklets should be made available through the advertising, and should be distributed by members of the association.

A Unifying Slogan and Trademark

One means of centralizing all of the efforts of the various members of the association would be the adoption of a common symbol and slogan which would serve to convey the central message that the association has to deliver to the public, and would also act as a hallmark of quality and good faith. Some such phrase as "Gas the essence of heat," or the slogan adopted in various forms such as "If it's done with heat you can do it better with gas," or "If it's heat you want—use gas," should be decided upon and adopted uniformly, together with an easily identified association trademark which could be used

(Continued on page 1187)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 45

Expansion Effect of Heat (continued)

Example of Using the Formula

The value of the formula may be better demonstrated by an example which will show just how it can be used. It must be remembered that gas is always metered in the wet condition and it is burnt in the wet condition, so that it is far more preferable to have the volumetric data of a gas expressed in terms of the wet gas. The correction factors are then applied as in the following example:

For example, 100,000 cubic feet of gas are metered at a temperature of 65 degrees F, and at a pressure of two inches of mercury as read off an ordinary U tube gauge. The absolute temperature will then be 460 plus 65, or 525 degrees F, and the absolute pressure 31 plus 2, or 33 inches of mercury, if the barometer indicated an atmospheric pressure of 31 inches of mercury. It is required to know the volume of the wet gas at standard conditions of temperature and pressure, that is, at 30 inches of mercury pressure and 60 degrees F temperature.

Solving the Problem

As has been indicated above, the new volume will be equal to the old volume multiplied by a correction factor K. The formula for this correction factor is given above, and when the various values are substituted for the terms in the formula, it becomes as follows:

$$17.64 \times \frac{33 - 0.623}{525}, \text{ or } 1.082.$$

Hence, the new volume of the gas, that is, the volume of the same gas as measured under the observed conditions of pressure and temperature, but with corrections applied not only for change in temperature and in pressure to standard conditions, but also for the water vapor that is contained in it, and that contributes to the pressure under which the gas was first measured—this new volume of the wet gas under standard conditions will be found by multiplying the original volume by the factor 1.082. Thus, 100,000 × 1.082, or 108,200 cubic feet of gas, is the new volume of the gas at 60 degrees F and 30 inches of mercury.

Effect of Omitting the Moisture Correction

It will be interesting to determine just how great an error is introduced by neglecting to correct the pressure of the gas for the tension of water vapor in it. The same data used above will be employed in this calculation. Thus the original volume of gas, 100,000 cubic feet, will now be multiplied by two fractions, one expressing the volume change, due to the variation in temperature from 65 to 60 degrees F, and the other the change in volume due to the change in pressure from 33 inches of mercury to 30 inches of mercury.

Thus the calculation will take the following form:

$$100{,}000 \times \frac{460 + 60}{460 + 65} \times \frac{33}{30} = 100{,}000 \times \frac{520}{525} \times \frac{11}{10}.$$

The resulting volume of gas will then be 100,000 × 1.089, or 108,900 cubic feet. Thus the error amounts to 700 cubic feet, which is, of course, appreciable, although when measuring small volumes of gas the difference in the results is not material.

ADJUST THE GAS STOVE, FRICK TELLS HOUSEWIFE

Hundreds of gas stoves in every community are out of adjustment, according to John A. Frick, of Allentown, president of the Pennsylvania Gas Association, and he suggests that housewives who are inclined sometimes to blame the quality of gas have the stoves examined.

"When people have trouble they generally believe the gas service is at fault, while in reality the fault lies in the stove," Mr. Frick said, according to the Pennsylvania Public Service Information Committee. "Going into hundreds of homes, it is surprising to see the number of stoves that are not adjusted correctly. Housewives would be doing themselves and the gas company a favor if those housewives would tell the companies about it."

A nation-wide movement to protect the country's users of gas against poorly made and danger- Association. A fund to establish a national appli- ous appliances has been begun by the American Gas ance testing laboratory has been created. Associated in the project will be the United States Bureau of Mines, the Bureau of Standards and the Bureau of Public Health, the 1,700 manufactured and natural gas companies in the United States and Canada and several hundred gas appliance manufacturers.

The purpose of the laboratory, which will be located in New York City, will be to increase the efficiency of gas utilization, raise performance and construction standards of gas appliances and eliminate as far as possible the use of inferior, dangerous and inadequate apparatus.

A Report on Thermal Value of Gas

Made for Detroit by a testing laboratory

A SERIES of gas tests were made to determine the relative value of 600 and 530 B.t.u. gas for use in the household.

The work embodied in an investigation of this character is, of course, extensive, since it involves a tremendous amount of detail in obtaining data upon the important factors influencing the economic use of gas, as well as upon the results which are obtained when gas of any heating value is used without regard to its efficient application, for instance:

1. Rate of gas flow as influenced by pressure, burner-cock opening, and orifice area.
2. Quantity of primary and secondary air as influenced respectively by burner-shutter opening, venturi proportion, and emulsive inspiration of secondary air—the latter being greatly affected by height of burner setting.
3. Waste heat losses as effected by improper size utensils for a given purpose.
4. Conduction and radiation losses as effected by height of burner setting and character of cooking.
5. Character of products of combustion and the relation of the previously named factors to the formation of deleterious carbon-monoxide.
6. Gross heat value of gas and the constituency of the gas, as well as the influence of barometric pressure and temperature upon the volume of gas.

These are principal among the subjects investigated by over 2,000 tests, the presentation of which requires many tables, some 200 curves and much descriptive and conclusive reading matter.

In view of the mass of data thus obtained, it required much of our time, as well as that of the special observers, in co-ordination of results, therefore we can give to you at this time only briefly the conclusions which we have arrived at, referring to our main report for treatment of the subject in its entirety. These conclusions are as follows:

Conclusions

1. The maximum temperature of the flame from burning of 530 B.t.u. gas is almost invariably higher than that from burning 600 B.t.u. gas.
2. The maximum temperature of the flame from burning 530 B.t.u. gas occurs at a height nearer the burner than with the 600 B.t.u. gas.
3. Collective temperature measurements of the flame, as obtained by heating of a ⅛ in. thick cast iron plate, show that the height above the burner at which the plate is placed is one of the most important factors influencing efficiency and economic use of gas, and when, with the 530 B.t.u. gas this height is correctly established, the resulting efficiency is over 12 per cent greater than the efficiency of 600 B.t.u. gas at the standard setting of 1¼ in. and at gas pressure between 2 in. and 3 in. Further, the ultimate temperatures reached in this plate were the same or higher, depending upon burner adjustment, with the 530 B.t.u. gas than with the 600 B.t.u. gas.

   Note: In the above-mentioned plate tests, the condition of use is exactly comparable to that obtaining when cooking is done at a temperature considerably above that of boiling water.

4. With proper air adjustment and use of gas at moderate flow rates, at a given setting above the burner, the plate efficiency of 530 B.t.u. gas is found to be 12 per cent above that of 600 B.t.u. gas under the same conditions. It might be well to here state that to be of the same economic value, 530 B.t.u. gas would have to show about 4.5 per cent greater efficiency than 600 B.t.u. gas.
5. Not only can higher efficiencies be obtained with 530 B.t.u. gas, as shown either by plate tests or in boiling tests, but with proper burner adjustment and proper burner setting, the gain in efficiency from the use of 530 B.t.u. gas over that of 600 B.t.u. gas will be sufficient to actually reduce the cost of gas over that obtaining with the use of 600 B.t.u. gas at the same rates of cost per thousand cubic feet for either gas.
6. When air is exactly adjusted to suit 530 B.t.u. gas, in the same interval the maximum oven temperature attained was greater than with 600 B.t.u. gas with full air opening, consequently to bring the oven up to the same temperature as with 600 B.t.u. gas required a less quantity of gas of 530 B.t.u. value. If, on the other hand, improper air adjustment is tolerated with the 530 B.t.u. gas, then it has only slight advantage over the 600 B.t.u. gas.
7. Carbon-monoxide in dangerous quantities will not result from the use of either gas in any manner of use ordinarily employed, nor from 530 B.t.u. gas when used in the manner recommended. In fact, a lower percentage of this constituent of combustion, which is deleterious to health, will be present with 530 B.t.u. gas than ordinarily results from the burning of 600 B.t.u. gas.
8. Based upon the results of our tests, gas of 530 B.t.u. value has an advantage over 600 B.t.u. value, even though careful adjustment is not

(Continued on page 1187)

As The Journal Views It

A NATIONAL ADVERTISING CAMPAIGN

Recently considerable sentiment has developed in favor of the inauguration of a national advertising campaign on gas. In this respect gas would be following the lead of many other industries that have instituted such campaigns and that have benefited greatly from the results that have been obtained from them. In fact, it might be said that the national advertising campaign is a fixed institution and has been recognized as being perhaps one of the most valuable agents for promoting the welfare of an industry and disseminating accurate information regarding it.

Reference need only be made to some of the most conspicuous national advertising campaigns that have been conducted with such uniform success through the past few years to bring to the mind of the gas industry the value of such an enterprise when undertaken and conducted in the forceful manner common to these campaigns.

The paint and varnish industry has achieved marvelous success in increasing the sales of its products through national advertising, and by the adoption of the "Save the Surface and You Save All" slogan. Other industries have also attained success in this way. At the moment of writing the writer recalls a campaign going on at the present time to promote the sale and use of canned foods.

It is thus with great interest that we read of the recommendations that were recently made at the Convention of the Pacific Coast Gas Association, to the effect that the gas industry of the West Coast should undertake a national advertising campaign covering that particular section of the country. In the report that was published by the aforementioned committee the matter was gone into in great detail, and the advantages of such an undertaking were described. Furthermore, the mechanism of its operation was explained, the various agents that can and are being used in national advertising campiagns were discussed, and, in conclusion, the committee urged the gas men of the Pacific Coast most strenuously to wait no longer, but to start this work at once.

The gas industry has considered itself to be a peculiar industry and that it does not require advertising except something of a very special nature. In the past the question has been raised by many, "Why advertise at all, when people will use gas, whether it is advertised or not?" This is but false economy. One of the prime functions of advertising is to call the attention of people to things that are common, that for sheer commonness escape attention, so they may be constantly reminded about them, and which exist for their comfort and service.

Many an industry has made the mistake of stopping advertising at the point where it was thought there was no further need for it, because it was felt that now the product would sell itself. The gas industry needs advertising just as much as any other industry, and in certain respects it needs it more. It is not only necessary to advertise gas, but to advertise service as well. To create good will in the community that is served by gas, to develop the work which has had such great success wherever it has been undertaken, customer ownership—the gas industry needs advertising, for it has many messages to deliver to its public, and it must do this for its own welfare and the welfare of those whom it serves. It must be evident that the gas company must not only blow its own horn, but blow it constantly, so that those who use gas will know what it is and what it is doing for them.

Furthermore, from the industrial standpoint, gas needs increasingly greater advertising. Manufacturers, business men, and the public in common, should be constantly told about the great developments that are being made in the use of gas as an industrial fuel. This side of the business should be brought before them right straight along. They should be given no opportunity of forgetting it. This will help to make people realize that gas is the best and most effective fuel of industry. Of course,

the road is a long and a hard one which the gas industry has to travel before it reaches its goal, but advertising will help it along this road as much as anything.

All this advertising work, when arranged scientifically, and conducted in a business-like manner and disseminated simultaneously throughout the country, will have a most wonderful effect on the gas industry. There is no question but that when the entire industry, throughout every state in the Union, arranges to advertise in a common way, and to use advertising copy of a standard type, the combined reaction of this tremendous force for publicity will redound to the advantage of all.

National advertising has been known to have this result. Each individual advertiser who contributes to and supports such a campaign is benefited by the advertising that is done by all. Furthermore, national advertising will avoid the many pitfalls that are always present in writing advertising copy. Copy prepared by experts who have studied the matter carefully and thoroughly will be distributed throughout the country and used by the individual gas companies in their own communities, with perhaps a change or two to make them more applicable to local conditions.

The use of the slogan, "If it is done with heat, you can do it better with Gas," scattered broadcast throughout the country, incorporated in all advertising, no matter what it is or what it may be used for, printed on all letterheads and on all literature issued by the gas companies, on the bills, on receipts, on notices, in fact, on everything that will come in contact with the customer, will also have a most potent effect.

This is not an untried field. This is not something new. It is simply the application of a most powerful agent which has been known to produce good results in every field where it has been used. It is bound to achieve success here as well as elsewhere, and its institution by the gas industry will mark a most important step in its progress.

A Fine Example of a Gas Display Seen in the Peoples Gas Stores Windows, Chicago

Catechism of Central Station Gas Engineering in the United States

Installment No. 45.

(Continued from last week)

The Meaning of "Light" Meters

239. What is meant by the term "light" used in designating the size of meters? Is its value the same in small meters, such as 3-lights, as in large meters, such as 100-lights?

Ans. The term "light" used in designating the size of gas meters is a conventional term which is supposed to indicate the number of lights or burners the consumption of which the meter is capable of supplying. It does not, however, afford an exact indication of the amount of gas which may be passed through the meter without overloading it, since its value expressed in the quantity of gas that may be delivered varies very much with the size of the meter. Thus a 3-light meter can easily supply 50 cubic feet per hour, so that in this case the value of a light is nearly 17 cubic feet per hour. A 100-light meter should not be called upon to pass more than 600 cubic feet per hour, which makes the value of the light for this size of meter only 6 cubic feet per hour. The value of a light is therefore not the same in small meters as in large meters.

Standard Sizes of Meters

240. What are the different standard sizes of consumers' meters, and how many cubic feet of gas will each size of meter supply per hour?

Ans. The standard sizes of consumers' meters are:

3 light	60 light
5 "	80 "
10 "	100 "
20 "	150 "
30 "	200 "
45 "	250 "
	300 light

The volume of gas that will pass through a meter in a given length of time depends, among other things, upon the pressure lost in the meter, that is, the difference between the pressure of the gas at the inlet and the pressure at the outlet. There is no general agreement as to the amount of pressure that it is permissible to allow the meter to absorb. Mr. C. W. Hinman, in a paper on the "Measurement of Gas," read before the New England Association of Gas Engineers, says that when the meter is measuring gas to be used for illuminating purposes a loss of 4/10 in. is as large as should be permitted, since any larger loss would cause a fluctuation in the pressure at the outlet, due to the working of the meter, of sufficient magnitude to show on the flames. Many engineers set the limit at 5/10 in., while on the other hand some do not think that the loss should exceed 3/10 in.

Meter Capacities

Meters made by different makers differ from each other in the amount of gas passed for the same loss of pressure, although rated as being the same size. The figures given in the following table are the average capacities per hour determined from tests of meters of each size from a number of different makers:

Size	Capacity with loss of pressure of 3-10 in cu. ft.	Capacity with loss of pressure of 5-10 in. cu. ft.
3 light	40	55
5 "	50	75
10 "	80	120
20 "	115	160
30 "	175	270
45 "	215	315
60 "	330	475
100 "	385	600
150 "		1015
200 "		1380
300 "		1635

It is generally assumed that it is safe to connect to a meter burners with a greater total capacity than that of the meter, because it is not probable that all the burners will be lighted at any one time, but it is not wise to take too much risk along this line.

Determining Size of Meter

241. How would you determine the size of meter that should be set in any given house?

Ans. The size of meter that should be set in any given house depends upon the amount of gas that is apt to be used at any one time, that is, upon the probable maximum rate of consumption. The only way to determine what this rate will be is to count the number of burners and gas-consuming appliances that may be installed in the house. It is usual to assume that every burner will consume five feet per hour. Where there are incandescent burners in use, this will give a liberal margin. The rate of consumption of gas appliances, when not known by previous experience, must either be estimated or actually obtained by setting a meter, lighting all the burners on the appliances and observing the consumption.

After the total number of burners is obtained (the consumption of the appliances in cubic feet being translated into burners by dividing the number of cubic feet per hour by five), the size of meter necessary would be determined by the fitter, either by reference to a schedule furnished by the company giving the sizes of meters corresponding to various numbers of burners, or in the absence of any such

schedule, from his knowledge of the capacities of meters in cubic feet per hour. There is considerable uncertainty regarding the capacities of meters, but the following table, based on a loss in pressure between the inlet and outlet of meter of five-tenths of an inch, and upon the smallest types of the various makes of meters, is a good one to use:

Capacity of Meters

Size	Cubic feet capacity per hour with 5-10 loss in pressure	Equivalent in 5-foot burners
3	55	11
5	75	15
10	120	24
20	160	32
30	270	54
45	315	63
60	475	95
100	600	120
150	1,015	203
200	1,380	276
300	1,635	327

Using the Table

Knowing the estimated rate of consumption in cubic feet of the house, the fitter need only to turn to this capacity table and take that size of meter whose capacity is equal to or greater than the consumption required, if his company believed in setting a meter equal always to the possible maximum consumption in the house. In practice, however, there is seldom a time when all the burners and appliances in the house are used at the same moment, so that it is probably unnecessary to set a meter of the size called for by their united demands, and therefore most schedules for meter sizes are made up on the basis of providing a meter capacity of about two-thirds of the possible maximum demand. The only effect of setting meters according to such a schedule would be that, in the very rare cases where everything was being used at once, the meter would absorb more than five-tenths of an inch pressure.

Size of Lead Pipe Used With Meters

242. What would be the size and weight of the lead pipe used for making connections for 3-light, 5-light, 10-light and 20-light meters respectively?

Ans. The following sizes of lead pipe should be used for connections for the various sizes of meters covered by the question:

3-light, ⅝ in. 10-light, 1 in.
5-light, ¾ in. 20-light, 1 in.

The weight that should be used will depend upon the amount of care taken in supporting the meters upon shelves. When this is carefully looked after, so that none of the weight of the meters is carried by the connections, good weights are as follows:

⅝" pipe for 3-light, 1½ lb. per ft., known as "C" pipe
¾" pipe for 5-light, 1¾ lb. per ft., known as "C" pipe
1" pipe for 10 & 20 lt., 2 lb. per ft., known as "D" pipe

When no particular attention is paid to the support of the meters, so that a large part of their weight is liable to be carried by the connections, it is well to use a heavier pipe and make the weights,

⅝" pipe for 3-light, 2 lb. per ft., known as "B" pipe
¾" pipe for 5-light, 2¼ lb. per ft., known as "B" pipe
1" pipe for 10 & 20 lt., 2½ lb. a ft., known as "C" pipe

It is better practice to use good shelves with care in setting the meters upon them properly and the lighter pipe, than to employ the heavier pipe merely to avoid having to exercise such care.

Making Meter Connections

243. In making meter connections the swivel of the meter union is by some inserted in the end of the lead pipe, the axes of the pipe and swivel coinciding, while by others it is inserted in an opening made in the side of the pipe with its axis at right angles to that of the pipe. State, with the reasons for your answer, which method you consider best.

Ans. It is better to insert the swivel in the end of the lead pipe, making what may be called a straight connection, rather than to insert it in an opening cut in the side of the pipe, making a "shoe connection," as it is sometimes called.

The straight connection is much stronger than the "shoe connection." This follows from their respective methods of construction. The swivel when inserted in the end is fastened to the pipe and held by it along a much greater length than when it is inserted through the side, consequently it is held more firmly and is able to stand a greater strain without breaking the joint and causing a leak.

Use of Swivel

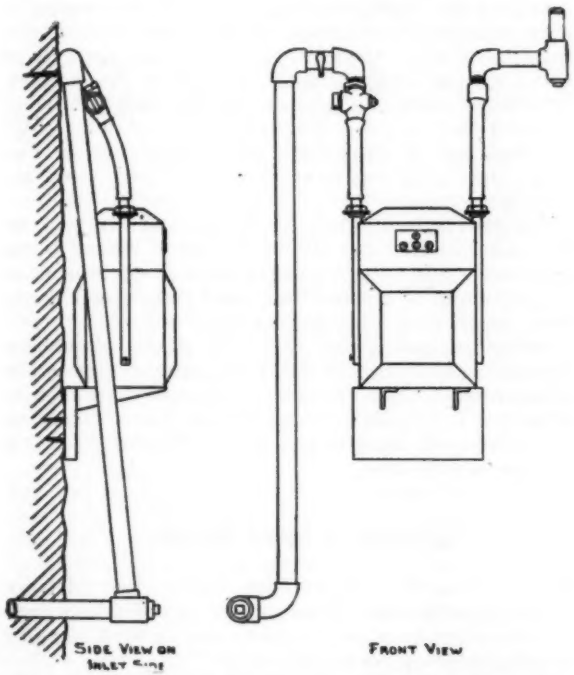
The swivel being simply a continuation of the pipe, the straight connection affords a freer passage for the gas. Unless the "shoe connection" is very carefully made the swivel is apt to be pushed so far into the pipe that it seriously obstructs the passage of the gas, even when it is not intentionally pushed far in to secure greater strength. If the hole in the pipe is not cut to the proper size and shape there is also danger of solder running down into the pipe and partially blocking it. The tight fit between the pipe and the swivel in the straight connection prevents any such running down of solder into the pipe. Any obstruction, whether caused by the swivel or by the solder, has a tendency to give rise to a deposit of naphthalene in the connection. Even if perfectly made, the shoe connection causes the gas to change the direction of its travel very abruptly, and thus throws more pressure than the straight connection, in which the change in direction is never more sudden than that caused by the use of an ell.

The straight connection requires the use of less labor and material in the making than does the shoe connection, since it is not only easier to expand the end of the pipe for the insertion of the swivel than it is to cut a hole out of its side, but in the shoe connection the end of the pipe must also be closed up and soldered together to insure its tightness.

One claim that is made for the shoe connection is that it is very convenient when meters have to be set close to the ceiling, but even in such cases it is possible to make the connection in other ways that are stronger and more workmanlike, and there is therefore no real reason in favor of this form of connection.

Making Meter Connections

244. Give a description, illustrated by sketches, of the manner in which you would connect a consumer's meter of the ordinary size (three to ten lights) to the end of the service and to the house riser, and also of the manner in which you would support the meter.



Method of Connecting Consumer's Meter to Service and to House Riser

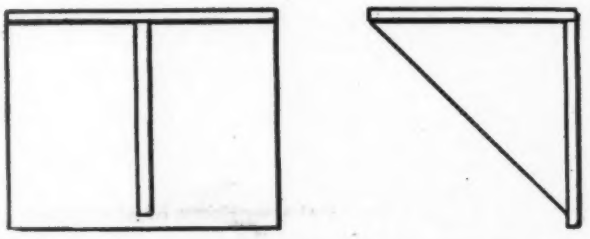
Ans. Although some gas companies are adopting all-iron connections even for three, five and ten-light meters, the use of lead connections for meters of these sizes is still so nearly universal that this answer will be confined to the consideration of such connections.

The end of the service coming through the cellar wall is finished with a tee set with its side outlet horizontal. Into this outlet is screwed a service elbow and into the elbow a straight piece of pipe of such a length as to bring its upper end the proper distance above the meter inlet when the meter is set at the desired height. On this upper end is put an ordinary elbow in which is inserted a piece of pipe running horizontally and parallel with the cellar wall, and of sufficient length to bring the outlet of a second service elbow, screwed in its end, in line with the meter inlet. The whole combination is then pushed back, turning around the service elbow in the tee at the end of the service as a center, until the horizontal portion is tight against the cellar wall, to which it is fastened with a pipe hook or hooks, so that it is rigidly held and not liable to be damaged by irresponsible persons even when the meter is disconnected. The meter cock is screwed on the service elbow at the end of the horizontal run, and the connection between it and the meter inlet made by the lead inlet connection, which may either be attached directly to the cock, as in the cut, or be separate from it, according to the kind of meter cock used.

It is necessary to use one more fitting when the connection is made in this way instead of being made, as is usually done, with the outlet of the tee at the end of the service looking vertically upwards and with the pipe running out of this outlet entirely free from the wall, but the security against possible accident when the meter is disconnected, obtained by having the pipe fastened to the wall, is certainly worth the small extra cost.

Connection to House Riser

On the outlet side of the meter the end of the house riser should also be finished off with a tee, out of the side outlet of which a piece of pipe is run to a point on the cellar wall above and behind the meter outlet. On the end of this pipe is screwed a reducing service elbow, to which the lead outlet connection is screwed; or, if the distance between this point and the meter outlet is too great, a reducing elbow is



used into which is put a nipple of the proper length, the coupling on the lead outlet connection being screwed on this nipple. On both the inlet and outlet sides of the meter the pipes should be kept the full size of the service and riser respectively until it is necessary to reduce for the meter cock or the outlet connection, as the case may be.

The meter should always be supported on a shelf of some kind so that none of its weight is carried by the connections. The shelf may be made in various ways. A good and simple form is made of three pieces of board, two of which are rectangular and equal in size, while the third is a right angled triangle with its two sides of the same length. These pieces are nailed together to form the shelf in the manner shown on the sketch. A form of shelf that leaves the bottom of the meter open for inspection is on the market. It consists of a piece of 1 in.

board 11½ in. long by 6½ in. wide. At about 3 in. from each end a groove is cut to a depth of about one-half the thickness of the board and running down 2 in. into the board from the top edge. Into these grooves are driven L shaped iron brackets 2 in. deep at the back, tapering to ¼ in. at the front, and 6½ in., 8½ in. and 11½ in. long for three, five and ten light meters, respectively. The flat sides of the brackets are uppermost and the meter rests on these, the board being fastened to the wall. This form of shelf is illustrated on the cut showing the meter connections.

When the cellar walls are such that nails cannot be driven into them, or when driven do not obtain a firmhold, holes should be drilled into them with a chisel at the proper points and filled with wooden plugs into which the nails can be driven so as to hold the shelf securely. The same thing can be done for the pipe hooks if they do not get a good hold in the wall.

Testing a Consumer's Meter

245. Describe the testing of a consumer's meter, giving all the precautions to be observed to secure accurate results.

Ans. Consumers' meters should be allowed to remain in the same room with the meter-prover at least one hour before testing, to allow the meter to become of the same temperature as the air in the room and the water in the meter-prover. Meters should undergo three distinct tests:

First. Test for registration on a small flame, about the size of a copper cent; this is to detect any leakage in the valves, or any holes in the diaphragm. If no registration appears when this test is made, the meter should go to the shop for examination.

Second. Test for irregularity of delivery, to show any stiffness or derangement of the internal mechanism of the meter. To give the test the greatest precision, the meter should be connected to a cluster or line of lights, of or near its full capacity, and if there is any irregularity in the working of the meter, it will show in fluctuation of the flames, and the meter should go to the shop.

Third. If both of the above tests show that the meter is in good working order, the third test should be for accuracy of registration.

Details of Operation of Test

When the meter has been connected to the prover, one or more cubic feet of air should be allowed to pass through the meter, to expel the gas remaining after the first two tests, then bring the hand on the prover and the test hand on the meter to zero, open the air passage between the prover and meter and allow the air under the prover-cylinder to pass through the meter, and when the test hand arrives at zero again, the scale on the prover shows to what extent, if any, the meter was in error. If the meter shows 1 per cent fast or 1½ per cent slow, it is considered correct, but beyond these limits it should go to the shop for adjustment or other repair, as examination may dictate.

All meters when not in use should be kept tightly corked, and no meter should be set which has not been tested within thirty days.

Frequency of Testing

246. How often should consumers' meters be tested to insure their accuracy?

Ans. Opinions differ as to how often consumers' meters of the smaller sizes, that is, up to and including 10 lights, shoul dbe tested in order to be certain that they are registering correctly. Some companies plan to bring in and test each year one-third of the total number of these small meters, so that all of them will be brought in for test every three years. Others lengthen the time out to five years, it being thought that this is a short enough intrval if rigidly adhered to. If all meters are tested once in five years the meter registration may be considered accurate.

All meters brought in on account of removal, or any other cause, should also be tested before being sent out again, even though there is no reason to suspect them of incorrectness, and they have already been tested in the regular course.

Large meters, those above 10 lights, should be brought in and tested every year, since owing to the large amounts of gas consumed through these meters any error is of greater consequence than it would be in the smaller meters, and it is profitable to check them up every year.

System of Meter Records

247. Describe a system of Meter Records by means of which full information in regard to each meter owned by a gas company can be filed so as to be available for ready reference.

Ans. Information in regard to a meter is wanted from various standpoints.

First: There is its physical history as a piece of apparatus, from the time of its purchase to the time of its final disposal by condemnation, including the various kinds of repairs made to it, and its tests for correctness of registration.

Second: There is its location at any given time, whether at a consumer's house, or out of use and undergoing repair, or awaiting setting.

Third: There is the record of the gas passed by it during its various periods of use in consumers' houses.

As the information above noted is always wanted about each meter as a unit (with the exception of the record of tests, as will hereafter be explained), it is absolutely necessary that every meter be designated by a separate number.

(Forty-sixth Installment Next Week)

MAKING THE PUBLIC THINK ABOUT IT

(Continued from page 1178)

not only in the general advertisements and literature of the association, but in all advertising products of the members. Such a trademark would soon come to symbolize with the public those ideas which the association would be presenting through its advertising plan.

A Motion Picture Film

One concrete form of educational advertising recommended by the committee is the preparation and distribution of a gas film, covering the manufacture, distribution and use of gas on the Pacific Coast. Much valuable educational work could be done by showing such a film before schools, lodges, clubs, etc. It is possible that some of the companies now have films, parts of which could be used. This film, "The Story of Gas," could be made up so as to follow a talk with which slides would be used.

"Write-ups" of an Educational Nature

As part of its work, the Bureau can very well prepare a series of brief "write-ups" which could be furnished in series to the different members of the association and run either as display advertisements or in the form of simulated news items, although they might be designated at the bottom of each write-up as "advertising." Appearing in the news columns, such items might do much to offset the effect of the sensational stories continually appearing as to the mishaps due to faulty gas appliance installations and the misuse of gas.

But we repeat that the backbone of this campaign, the central element which will serve to unify all the co-ordinated effort of the association, should be an adequate program of carefully worded and well-timed display advertisements.

Some Typical Topics for the Advertisements

The survey will determine, among other things, the central copy message which is to be stressed in the general advertising plan. The possibilities for interesting and valuable material are almost limitless. Following are some typical topics:

Gas—What Is Is.
The Story of Gas.
The Romance of the Gas Industry.
The Future of Gas.
An "Infant Industry" 100 Years Old.
The Modern Fuel—Gas.
Gas—How It Serves Mankind.
The Pacific Coast Gas Industry—How It Serves the People.
Your Local Gas Appliance Dealer—How He Can Serve You.
Public Misconceptions About Gas.
Health and Gas.
The Cleanest Fuel Known.
Hints for Getting the Most Value from Gas.
Gas—A Fuel Paid for as It Is Used.
Aladdin's Lamp Brought Up-to-date (Heat at the touch of a button).
Gas Gives the Most for the Price.
Hot Water at the Turn of a Faucet.
How Your Gas Meter Works.
What is a "B. T. U."?
The A. G. A. Gas Range Standards.

Topics of this kind could be made both interesting and instructive and could win many new converts to the use of gas. As a phase of this part of the campaign it might be that an impartial table, tabulating the various types of ranges, heaters, water heaters, giving in columnar form the general facts about each as to their capacity and their particular purpose, could be worked out—showing the advantages and disadvantages of each as well. It is to be understood, of course, that no reference will be made to specific makes of appliances, but that only in the broadest sense will the different types be considered.

Conclusion

To summarize, this committee respectfully urges that the time is ripe for the Pacific Coast gas industry to unite in a systematic campaign of advertising which by awakening the public to the diversified uses and the many merits of gas as fuel will increase the consumption of gas and the sale of gas appliances and help to retain the business already in hand. We recommend that the plan worked out be simple and comprehensive, that it be based on the true facts, that it be told in the people's language, and that it reach them through the mediums which are at once most economical and effective and that it be adequate to attain the ends sought. Above all, it is urged that in the analysis of the situation the facts be considered squarely and that stress be put upon those features in the service and the merchandise to be offered by the industry which obviously give the public better value for their money than competing services or merchandise in other fields. Gas has an interesting and romantic story to tell the public. It has many advantages and offers conveniences of which many of our people are totally unaware. The problem is to bring these truths home to them with sufficient emphasis and sufficient repetition to secure their acceptance and the attendant favorable action.

A REPORT ON THERMAL VALUE OF GAS

(Continued from page 1180)

made, but if proper adjustments are made the economic value of 530 B.t.u. gas is as great as that of 600 B.t.u. value; and if proper adjustment, proper use of the gas, and proper burner setting is provided, then 530 B.t.u. gas has an economic value sufficiently greater than 600 B.t.u. gas (as ordinarily used before adopting the 530 B.t.u. value) to actually reduce gas bills over those obtaining with 600 B.t.u. gas in use before the change in value was adopted.

MORE SIGNS OF IMPROVEMENT

(Continued from page 1175)

Immediate Outlook Hopeful

All this makes the immediate outlook rather hopeful, and manufacturers and distributors should not be disheartened because October did not at once bring all the fruits of ultimate success. No adjustment can take place without slight setbacks until the degree of economic strength supporting the market has been fully disclosed. This, according to our estimate, should be very extensive, with a general recovery due late this, or early next, year.

The warning cry of impending inflation has been raised again, as was the case two years ago, when the country shook off the economic depression, following the war boom. There is nothing in the present situation to cause misgivings, and a curtailment of commercial credits upon a false alarm of inflation certainly would do more harm than good at this point in the development of the market.

EVERY SEASON IS GAS RANGE SEASON

(Continued from page 1176)

How about giving a Thanksgiving turkey with every gas range purchase during the month of November, the turkey to be delivered any day desired?

FREE TURKEY

With every gas range purchased during the month of November we are giving, free, a Turkey. We do this because we want you to enjoy Mr. or Mrs. Gobbler when roasted in this wonderful range. We know that it will be roasted correctly and you will be thankful for the Bird, and we will be thankful for your trade.

THEN AND NOW

You recall that last Thanksgiving it was so much trouble and annoyance to roast the turkey in that coal stove, you were sorry you bought it.

We do not blame you, but here's some good news. You can get one of our ——— gas ranges at $—— down and $—— a month and one match will start the oven and your turkey will be roasted without the least bit of worry to you.

To the Then and Now card, you might add, if you approve: "The turkey we are going to give to you as a testimonial of our appreciation of your business, and to wish you a pleasant day, all of us having so much to be thankful for."

Here is a card that will cause a little merriment, but it states some facts:

HAIR BOBBING AND GAS RANGES

Why did the ladies have their hair bobbed?

Because it required too much time, energy and worry to care for their long hair.

Why should every woman discard a coal stove and use a gas range?

Because a coal stove requires too much time, energy and worry to handle. The gas range, like the bobbed hair, is made ready in a jiffy.

I have been thinking that if we would ascertain from a half dozen people how much coal they burn in their cooking stove ecah month—for cooking purposes only—and from another half dozen who use gas ranges for cooking only, and then compare the cost of coal and gas, we would find that the cost for the coal stove is greater, without taking into consideration the worry occasioned by the antiquated thing.

N. Y. STATE LEADS NATIONAL SHIFT TO GAS AS BEST FUEL

Nearly one-fourth of the country's entire production of manufactured gas, 92,000,000,000 cubic feet, was consumed in factories, mills and other industrial plants last year, according to a survey just completed by the New York State Committee on Public Utility Information. This total, which marks a new record in the growing use of gas as industrial fuel, is 30 per cent greater than the previous high mark of 70,000,000,000 cubic feet, the total for 1921.

The manufactured gas used in industry in the Empire State alone approximated 25,000,000,000 cubic feet in 1923.

The present use of gas in New York State is divided as follows: 20 per cent for lighting, 25 per cent for industrial fuel and 55 per cent for domestic heating and cooking. It is estimated that at the present rate of change less than 10 per cent of the gas consumed in 1930 will be used for lighting and 90 per cent for domestic and industrial fuel.

The use of gas in industry is largely a development of the last decade, and its use for cooking and heating in the home began less than fifty years ago, with the invention of the electric light. Before that time more than 90 per cent of all the gas manufactured was used for lighting.

New York State now has 88 manufactured gas companies, serving about 10,000,000 people, while there are in service in the homes of the state more than 3,000,000 gas stoves, heaters and other domestic appliances.

FUEL OF THE FUTURE—WHAT SHALL IT BE?

(Continued from page 1174)

one-third of the cost of that of an electric furnace. This is based on the same figures that have been given above and on the assumption that the gas furnace will use from 25 to 50 per cent more heat units than the electric furnace.

It is thus evident that the gas man has now the means wherewith to combat the contention of the electric man that his fuel is the best in this particular field, and not only the best, but the more economical. As far as the other fuels are concerned, no mention need be made of them at all. They are not real contenders in the field. It is true that they cost less, much less, in fact, but they introduce all kinds of factors and conditions into the heating operation which renders the spoilage of goods very high. These cheap fuels are not easily controlled, the atmosphere within the furnace is hard to maintain in the proper condition, which is, of course, a very important factor in the heat treatment of metals, as an oxidizing atmosphere will injure the products that are being processed. Furthermore, they possess other disadvantages which more than offset their lower cost.

How Cost of Fuel Was Proven to Be of No Importance

It is very enlightening to recite here an example of how gas entered a particular branch of the heat-treating field and supplanted the cheaper fuel, while considerably decreasing the cost. This particular manufacturer was engaged in annealing the tops of milk cans. He used a coal-fired furnace and his method was to place a number of the shaped cans on a truck and wheel it into the furnace, where the milk can tops were annealed. When the gas engineer came in with his proposition of substituting gas for the fuel then employed, he was not met with any enthusiastic reception, for it was quickly evident to the manufacturer that he would have to pay much more for gas than for coal on the basis of his fuel consumption at that time. But the gas engineer did not present his proposition in detail until after he had studied the operation, and he saw then that the manufacturer was heating up considerably more weight of metal in the form of the carriage on which the can tops were supported than in the tops themselves. He thereupon designed a furnace of a continuous type, with a simple conveying system, wherein not only were the cans annealed better, but the consumption of heat was materially reduced because of the elimination of a great amount of excess weight which had no place in the process in the first place. As was aptly expressed by the engineer who recited this story, the manufacturer was so thoroughly sold on gas, so enraptured with the process as improved by the gas man, that he would have been content to pay any amount for his fuel in order to reap the advantages gained from its use in his plant.

The Moral of the Story

The moral of the story is a very evident one, but one which is of vital importance to the gas man. The extra cost of gaseous fuel will gladly be overlooked by the manufacturer, not only in this particular field, the heat treatment of metals, but in any field where gas can be used as an industrial fuel, if the gas man will study the operations and effect improvements in them. There are always plenty of opportunities present for such improvements, particularly where heat is concerned, for it is still an undoubted fact that the great majority of heating operations are carried out very inefficiently. For the simple reason that the fuels commonly used are cheap. When the gas man enters the field with his more expensive fuel, he must look for economies to create in conjunction with the use of gas, in order to justify its substitution for more expensive fuels, and for improvements to effect in operating methods for the self-same reason. The result is that the advent of the gas man in the heat treating field, or, in fact, in any other industrial field, will inevitably be marked by increased manufacturing efficiency. Thus industrial gas performs a double function for the manufacturer. It not only gives him a better fuel, a fuel which is better adapted for the operations that are carried out in his plant, but it also shows him how better to carry out his manufacturing processes and it indicates to him how to effect economies of importance.

Fundamental Economic Factors in Heat Treatment

In the heat treatment of metals there are two fundamental economic factors. In the first place, the fuel must be burnt effectively and completely and must give the kind of atmosphere that is suited for the process. In the second place, the material treated must be protected against spoilage. The latter is perhaps the more important consideration of the two, for complete combustion of the fuel itself is something which is advantageous, but not altogether essential, in this process. In other words, if the fuel is not completely burnt, of course there is loss in heat values, but nothing else. These losses may be of moment, but they do not compare with the losses that are entailed by the spoiling of the product that is being heat treated. The importance of this latter matter is accentuated when it is realized that the heat treatment comes generally at the end of the process or close to the end, so that if the article is spoiled, be it a knife blade or an automobile engine crank shaft, the loss is not only in the material itself, but also in the labor that has been expended in fashioning the article and getting it into shape to be heat treated.

It is, therefore, essential that the fuel be such that will keep spoilage down to a very minimum.

An important consideration in this connection is the atmosphere in which the heating takes place, which must be reducing so as to avoid oxidation of the metal. Gas possesses important advantages in this respect over the other fuels commonly employed for this purpose. The atmosphere can be maintained in a reducing condition when gas is used, the regulation being very simple and easy to effect. In fact, in this particular connection it may be said that electricity does not possess any advantages over gas. The atmospheric conditions are as easy to maintain in the proper state in the gas-fired heat treating furnace as in the electric furnace, if not more so.

Therefore, the gas man has a fuel which is particularly well adapted to the heat-treating field. It is a fuel which possesses all the advantages of electricity, which is now being used so largely in this field, but which has the additional advantage of being considerably cheaper than electricity. The gas man must convince the manufacturer that gas is just as good, if not a better, fuel than electricity, that the heat-treating process can be carried on just as efficiently with gas as with electricity. He must not introduce the item of cost until his prospect is agreed that gas will give the results, and then he can spring the argument of the saving in fuel cost, which will have a potent effect under those conditions. It will not do to try to talk the manufacturer into using gas because it is the cheaper fuel. He does not care particularly whether it is or not. He has selected electricity in spite of its high cost, for he obtains good results with it and has but little spoilage of merchandise. Hence, even if gas were one hundred times as cheap as electricity, he would not be interested in making the change unless he were first convinced that gas will do the work as well as electricity. This applies not only to the man who is now using electric furnaces, but also to him who contemplates abandoning the coal or coke-fired furnace for the electric furnace.

The Mechanical Details of the Process

Another important point that the gas man must bear in mind is the fact that when he approaches a manufacturer who has been accustomed to use a coal or coke-fired furnace, he must look for the possibilities of improving the mechanical layout of the heating operation. As has been said before, this can generally be done, and when such improvements are made, even though the manufacturer was first inclined to lay too much emphasis on the additional cost of gaseous fuel, he will be glad to pay almost any price for it, because of the great saving in fuel consumption that the gas man can accomplish for him by a simple change in the manner in which he operates this part of his manufacturing process.

The net conclusion that must be reached from this discussion is that the heat-treating business is there for the gas man to secure. It is a big business, a tremendous field, in which the need for perfecting the common processes now employed has been and still is very great. The strong competition that has arisen in the metal industry, in the manufacture of cutlery, automobiles and the like, in the production of tools, fine instruments and other metallic merchandise, made not only from steel, but from other metals as well, has made the manufacturers desirous of reducing their costs as far as possible.

By the use of electricity they have gained certain important advantages in that there is not so much chance in spoiling the articles of manufacture as when other fuels are employed in the heat-treating furnace. They have been glad to adopt electricity, even though the cost of this fuel was greater than of those they had been using. Now comes gas, offering the same advantages as electricity, and, in addition thereto, being less expensive than this form of energy.

There can be no doubt in anyone's mind that this is the field for gas. Even the electrical men who have been following this line have agreed to the contention that the heat-treating field is pre-eminently a gas field. It remains for the gas man to take the proper steps to acquire this business. It can be done, and it must be done. There are obstacles in the way, to be sure. But they can and must be overcome. Properly designed and constructed gas-fired furnaces are now available. That was the last great difficulty that had to be surmounted before gas could enter the field.

There is no better example of the universality of the applicability of gas to processes wherein heat is employed than the heat-treating business. It just proves to us all over again that gas is the universal fuel, the fuel on which all industry will eventually depend.

Putting in Operation a New Ten Million Cubic Foot Holder in San Francisco

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B., mines, net tons).

High Volatile, Eastern	Market	Price
Pool 54-64 (Gas Standard)	New York	$1.40 to $1.60
Pittsburgh screened gas	Pittsburgh	2.30 to 2.50
Pittsburgh gas, mine run	Pittsburgh	2.00 to 2.25
Kanawha lump	Columbus	2.35 to 2.75
Kanawha mine run	Columbus	1.40 to 1.75
West Virginia lump	Cincinnati	2.50 to 2.75
W. Virginia gas mine run	Cincinnati	1.40 to 1.50
Midwest		
Indiana 4th vein lump	Chicago	3.00 to 3.25
Indiana 4th vein mine run	Chicago	2.25 to 2.50
South and Southwest		
Big Seam lump	Birmingham	2.75 to 3.50
Big Seam mine run	Birmingham	1.50 to 1.90
Southeast Kentucky lump	Louisville	3.00 to 3.50
Southeast Kentucky mine run	Louisville	1.50 to 1.75

B. Anthracite.

(Spot prices F. O. B. mines, gross tons),

Market	Freight rates	Independent	Company
Egg New York	$2.34	$8.75 to $9.50	$8.75 to $9.25
Egg Philadelphia	2.39	9.45 to 9.75	8.80 to 9.25
Egg Chicago (net tons)	5.06	8.17 to 8.25	8.14 to 8.20

COKE (By Courtesy of Iron Trade Review).

Connellsville, furnace	$3.00 to $3.25
Wise County, furnace	3.75 to 4.00
Alabama, furnace	4.50 to 5.00
Foundry, Newark, N. J., del.	10.41
Foundry, Chicago, ovens	10.75
Foundry, Boston, delivered	11.50
Foundry, St. Louis	11.00
Foundry, Granite City, Ill.	9.00
Foundry, Alabama	4.50 to 5.00

PETROLEUM (By Courtesy of Oil, Paint & Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia.	
Cabell, West Virginia	1.45
Corning, Ohio	1.50
Lima	1.38
Pennsylvania	$2.75 to 2.85
Wooster, Ohio	1.40
Indiana—Illinois.	
Illinois	1.37
Indiana	1.38
Oklahoma—Kansas.	
Healdton	.90
Mid-continent (low gravity)	.75 to .90
Gulf Coast.	
Gulf Coast, Grade A	$1.50
Gulf Coast, Grade B	1.20

GAS OILS.

Gas Oil, Bayonne, bulk gal.	5 to 5¼c
Gas Oil (32-36) Oklahoma, gal.	2¾ to 3 c
Gas Oil (32-36) Gulf Coast, gal.	3¾ to 4 c

PIPE AND FITTINGS—CAST IRON GAS PIPE.

(By Courtesy Iron Trade Review.)

Four-inch, Chicago	$58.20 to $59.20
Six-inch and over, Chicago	54.20 to 55.20
Four-inch, Birmingham	53.00 to 54.00
Six-inch and over, Birmingham	49.00 to 50.00
Four-inch, New York	69.60 to 70.60
Six-inch and over, New York	64.60 to 65.60
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug

Ammonia aqua, 16 deg. drums lb.	5 to 5¼c
Ammonia aqua, 20 deg. drums lb.	6¼ to 6½c
Ammonia aqua, 26 deg. drums lb.	6½ to 7 c
Ammonia squa, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk F. O. B. Works, per 100 lbs.	$2.65 to $2.70
Potash prussiate, yellow casks, lb.	16½ to 17 c
Potash prussiate, red casks, lb	37 to 38 c
Soda prussiate, yellow casks,	9¼ to 9¾c
Soda sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS.

(By Courtesy of Oil, Paint and Drug Reporter)

Benzol C. P. tanks, works, gal.	24 to 25c
Benzol, drums, gal.	30c
Benzol, 90% tanks, works, gal.	23c
Benzol, 90% drums, gal.	28c
Napthalene, flake, barrels, lb.	4½ to 5 c
Napthalene, dyestuff bags, lb.	4½ to 5 c
Solvent Naphtha, water white works, gal.	24 to 25c
Solvent Naphtha, drums, works, gal.	29 to 30c
Toluene, C. P. tanks, works, gal.	31c
Toluene C. P. drums, works, gal.	36c

Coal

Bituminous coal production receded during the week ended November 1, when, according to the Geological Survey, 10,091,000 net tons was produced, compared with 10,300,000 tons during the preceding week, as shown by revised figures. In like manner, anthracite output fell away to 1,444,000 net tons, compared with 1,927,000 tons during the week ended October 25.

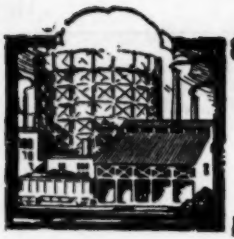
Crude Oil

Featuring the market for crude oil during the week was a general advance in Gulf Coast crude named late in the week. The advance was 25 cents per barrel on Grade A, bringing the market up to $1.50 per barrel, and 20 cents per barrel on Grade B, making the market on the latter $1.25 per barrel.

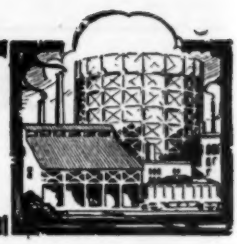
Continued progress in cutting down the output of crude oil was indicated by the report for the last week in October, which showed a further drop of 13,600 barrels a day. The American Petroleum Institute estimated that the daily average gross crude oil production in the United States for the week ended November 1 was 1,944,100 barrels, as compared with 1,957,700 barrels for the preceding week.

Gas Oil

Gas oil business was of routine proportions on spot, refiners quoting 5 to 5¼ cents per gallon in bulk, Bayonne. Louisiana and Arkansas refineries were quoting 32-36 gas oil at 3 to 3¼ cents per gallon, a reduction of ⅛ cent per gallon from the previous week's prices.



NEWS OF THE GAS INDUSTRY



"The Oldest Idea In Business"

Gas Sales Association of New England Hold First Meeting of the Season

By Special Correspondent

The first meeting of the Gas Sales Association of New England for the season of 1924-1925 was held at the Boston City Club on Friday evening, November 7, 1924.

Governor J. J. Quinn, in his opening remarks, stated that the association had planned for many things of interest for the members during the coming year. He also expressed the hope that this year would be as successful as the previous years of the association. He commented upon the fact that the Gas Sales Association of New England endeavored to cement friendship among the men engaged in the gas industry throughout New England.

During the past year the association has lost one member by death, Mr. A. A. Wilbur of Brockton. Mr. Wilbur was always very much interested in gas activities and the work of the association. In memory of Mr. Wilbur the members of the association stood with bowed heads.

Governor Quinn stated that tonight's meeting was the beginning of the eighth year of the association. The first meeting was held October 19, 1917, with 24 present. Compare this with the present membership of 175 members and you will see what the association has accomplished during the past seven years.

Object of Association Emphasized

The Governor emphasized the object of the Gas Sales Association, which is: To develop a better feeling among gas companies and manufacturers, appliance salesmen, and to develop and increase the use of gas.

Mr. Quinn brought out the point of how active the gas industry was in New England. He cited the meetings which were held Friday, November 7, in Boston. At 9:30 o'clock there was a Sales Quota Meeting, at which members of the committee were endeavoring to establish sales quotas which would be applicable to every gas company. At noon there was a meeting of Industrial Gas Men and at 4 o'clock a meeting of the Commercial Gas Managers and at 6 o'clock the meeting of the Gas Sales Association of New England.

Three committees of the association which are actively at work reported as follows:

Mr. Stephens, chairman of the Sales Quota Committee, reported that the committee was making progress, but nothing definite could be reported on as yet.

Mr. M. B. Webber, chairman of the Co-ordination Committee, reported that his committee had two conferences and they are ready to enter their report when called upon to do so.

Mr. Charles Aaron, reporting for the Advertising Committee, stated the committee had formulated definite plans and they would recommend that some advertising counsel be employed to assist in the work of bringing the gas industry before the public.

The speaker of the evening was Mr. Warner H. Jenkins, Jr., vice-president of MacManus, Inc., of Detroit, Michigan.

The Address of the Evening

The speaker said in part:

"Advertising is a word I dislike very much, because I have become so familiar with the word. If you repeat a word or a phrase time and time again, eventually the word has no meaning. Advertising, because of its repetition, loses its real meaning. Take the word 'service,' for instance; we have used the word so much that it doesn't register anything definite.

"Mass selling—that is what advertising really is. There is probably more misrepresentation of advertising and this mass selling than on any other thing in the world. As we see it, advertising is something every man should well understand.

"A great many people think advertising should consist of a lot of loud noise and association with band wagons, etc. Noise has very little to do with good advertising. Advertising is not necessarily associated with loud clamour, because it is a thing that expresses itself through business. A real fine job of advertising does this.

"Suppose a man gets on a train and, having never been west of Chicago, he intends to visit Denver. He arrives at Denver, he gets off the train in an entirely strange city, everything is new to him. He goes to a strange hotel, but before retiring he decides to take a walk down town and purchase a tube of tooth paste. He walks along the street and he turns into a drug store and asks the clerk for a tube of dental cream. The clerk asks him, 'Colgate's or Smith's.' What has happened, that man, in an entirely strange town, has heard a symbol that means familiarity and friendship. He knows what Colgate's means through advertising. It is a symbol he has stored away as a safe-

guard. He does not know how the tooth paste is made. To him the word Colgate spells Safety. This is the simplest thing in the world, but imagine operating it all over the world. Think of the utter simplicity of the thing."

Continuing, the speaker said: "The only thing that any manufacturer is looking for, if he told you the truth, is good repute. Certainly it is the most valuable thing he can introduce into his business. The only time the business is actually challenged is when a man asks a price.

Advertising Oldest Idea in Business

"The oldest idea in business is advertising. Most of us think that the easiest way to do business with anybody is to do it frankly and honestly. There is no truer saying than 'honesty is the best policy.' The easiest and best way to make dollars is to just make the public know you carry the best that can be made and the public will come to you. If you can build in the minds of people that you are making shoes just as well as you can make them, forgetting sales, you will be able to get all the business you need.

"None of us are smart by weeks or months, but as a rule we can think about the same level. Think right, with an open, frank and sincere policy.

"We want to have something that is permanent.

"Those of you who are dealing with appliances. Certain manufacturers, after costly experiences, have developed an article that they would like to have the public know about. If you hook up with that policy, if you use the same general expression that company uses, you are going to find that very definite profitable results will follow.

"The greatest thing in the world is an unbroken front and human element fits into the whole thing.

"Sometimes we hear a salesman say, 'I know a better way than that.' If he knows a better way than the sales executive himself, a better way than the advertising man, a better way than all the combined experiences in that business, that is miraculous, and miracles don't happen every day. If he will take these things that are best expressed, he is using the strongest sales argument necessary.

"You must establish a real faith in your product. You must keep advertising consistently. You must keep your name and product before the people. Send your message to the people in their own terms and know your product is the best that can be produced."

Governor Quinn, in commenting on the speaker's remarks, stated: "You have listened to a great deal of food for thought. You certainly showed you were interested in publicity and advertising by your presence here tonight."

Several members of the association and guests expressed their views on the subject and all agreed that advertising should be done consistently and the copy should endeavor to reach the home and be of human interest. Advertising breaks down the sales resistance, it introduces and paves the way for the product.

It was the consensus of opinion that advertising to be successful must be done in a simple, straightforward manner and must be done in a systematic manner.

James Cleary Joins Combustion Engineering Corp.

The Combustion Engineering Corporation announces that Mr. James Cleary, formerly manager of their Philadelphia office, will assume management of the Detroit and Cleveland territories, with headquarters in Detroit.

Mr. Frank Henderson will continue in charge of the Cleveland office.

Mr. Joseph Lappin, formerly in charge of the Detroit office, has been assigned to New York for special work.

The Detroit office has been removed from the Penobscot building to the Book building.

Financial News

Colorado Fuel and Iron Company declares its regular quarterly dividend of 2 per cent on preferred stock, payable November 26 to stockholders of record at close of business November 10.

Pacific Gas and Electric declares its regular quarterly dividend of $1.50 per share on the preferred capital stock, payable November 15 to shareholders of record at the close of October 31 business.

Consolidated Gas Co. Celebrates 40th Anniversary

This is the 40th anniversary of the Consolidated Gas Company of New York. It was on November 10, 1884, that the Consolidated Gas Company received its charter from the state. The original trustees of the company were Charles Roonie, Thomas K. Lees, Oscar Zallekoffer, John P. Kennedy, Charles G. Francklyn, Thomas Rutter, Harrison E. Gawtry, Percy R. Pyne, Samuel Sloan, James W. Smith, Henry Day, Arthur Leary and John P. Higgins. The first president of the company was Harrison E. Gawtry, who was largely instrumental in organizing the new company. The original capital was $45,000,000. The present capital is $195,000,000. The gas companies operating in this city which were consolidated in the new company were the New York Gas Light Company, Manhattan Gas Light Company, the Metropolitan Gas Light Company, the New York Mutual Gas Light Company, Municipal Gas Light Company, Knickerbocker Gas Light Company and the Harlem Gas Light Company. The oldest of the above companies was the New York Gas Light Company, which was chartered in 1823. Mr. George B. Cortelyou succeeded Mr. Harrison E. Gawtry as president of the Consolidated Gas Company on March 8, 1909. At the present time there are 22,000 holders of the company's common stock and 38,000 holders of the preferred stock. In the latter classification are customers and employees of the company.

Greenville Gas Co. Chartered

Raleigh, N. C.—Greenville Gas Company, Greenville, with authorized capital of $150,000 and $10,000 subscribed by E. B. Jermy, Jr., Major Lee White and William Jermy of Scranton, Pa., and Stephen C. Bragaw of Washington, N. C.

Calumet Gas & Electric Co. Inaugurates Customer Ownership Campaign

Customers of the Calumet Gas and Electric Company, which serves 62 communities in northern Indiana with electricity or gas, are to have the opportunity of becoming partners in the business through the customer ownership plan.

Samuel Insull is president of the Calumet Gas and Electric Company, which recently purchased 14 other public utility companies operating in 13 counties in northern Indiana.

In inaugurating a customer ownership campaign through this company, Mr. Insull is following the plan which has proved so successful in other public utility companies under his management.

The Public Service Commission of Indiana has authorized the issuance of 7 per cent preferred stock with a par value of $1,500,000, which will be offered to investors at $95 a share.

Employees of the company began selling this stock Saturday, November 1, in Elkhart, Valparaiso, Crown Point, East Gary, Plymouth, North Judson, Knox, LaGrange and other communities in which the company operates, and also in Gary, where the general offices of the company are located.

Gas Meter Course at Iowa State College

The gas meterman's short course to be held at the Iowa State College at Ames, on December 9 to 13, will be a real course of sprouts on gas meters and how to properly handle them.

No one in the gas business ever knew everything about meters, or as much as he really should know to secure the best results from his business.

It is only necessary to point out the value of correct registration of meters as a matter of good will building and holding to have you realize the great value along this one line which will come from a more thorough knowledge of gas meters. This school at Ames in December provides the opportunity for you to have your metermen and superintendents become more intimately acquainted with the inside workings of your gas meters to your everlasting benefit. Send them to this school, 'twill repay you many times.

Metermen who "know their stuff" are the kind you want around. They breathe confidence and radiate assurance, so that your customers feel their meter is in proper and capable hands.

To miss sending your men to Ames in December is to pass up a real opportunity.

JACKSON GAS PLANT WILL BE DOUBLED

Consumers Power Co. to Spend $300,000 to Increase Capacity

Jackson, Mich. — New oven plant equipment for the gas plant has been ordered by the Consumers Power Company and preparations for its installation will begin shortly. The new equipment will cost $300,000 and will double the capacity of the company's coal gas manufacturing equipment. The installation is expected to be completed by May 1, 1925.

Fifteen ovens, each with a capacity of 4.4 tons of coal, will be built by the Koppers Company of Pittsburgh, Pa.

"Producer gas" will be made first by an eight-foot six-inch ring-feed gas producer and will come from the producer at a temperature of 1,100 degrees Fahrenheit. Before it is burned under the ovens, the heat will be extracted and used to produce steam for running pumps in the plant. All salable coke will be utilized in the producer.

The expansion has been made necessary by increased industrial demands for gas in the city, Mr. Pett said. The new ovens will take care of the city for at least five years, and possibly ten. The ovens now in use were installed in 1917. The extension will be made south of the present plant.

Portsmouth's Gas Plant to Be Improved

Roanoke, Va. — Improvements aggregating $75,000, which were begun last May, have just been completed at the plant of the Portsmouth Gas Company. The improvements included carburetted water gas equipment, the last word in gas machinery, high duty condensers, new boilers, new pipe lines at the plant and machinery for temperature control of gas stored in the containers. There have also been installed a system of hydraulic controls.

B. B. Ferguson, president of the company, declared the improvements doubled the plant capacity, rendering the layout one of the best in the United States for its size.

Increased Use for Gas Sought

Richmond, Va.—Preliminary inquiry into the local gas situation has convinced Director of Public Utilities George H. Whitfield that something should be done to increase the consumption of city gas and that this increase, if it can be promoted, must be among the industrial users of gas.

Mr. Whitfield said that he was preparing to make a survey to determine how more industrial consumers can be induced to increase

Citizens Gas & Fuel Co. to Erect

their consumption, and how many new industrial consumers can be found.

"I am not yet prepared to recommend a sliding scale rate that will tend to enable more industries to use gas," he said, "but from preliminary investigation I believe that such a recommendation soon may be in order.

"We are very anxious to find out how many potentially large gas consumers will increase their consumption if a special industrial rate is approved by council. If a sliding scale rate for large consumers will greatly increase consumption, it will be worth while, because it will increase profits and possibly enable the city later to afford a general reduction.

"At any rate, we believe that if council sees a way for the gas plant to increase its earnings through a rate adjustment for industrial consumers, they probably will want to make such an adjustment."

Gas Charge Approved

Tiffin, Ohio—The Logan Gas Company's new rate schedule, which adds a 75 cents monthly service charge to the present rates, has been approved.

The Welsbach Line Makes Friends for Gas Heat

What do your customers look for in a gas heater when they come in to buy?

They are probably sold on gas heat already; they know it is quick, clean and always on the job. But what of the actual heater itself? Is the heat it gives the only consideration? Has economy of operation any influence? Or, does appearance figure most?

No matter what the individual needs and preferences of your customers, they can be met most satisfactorily with the Welsbach line.

The points that help you sell Welsbach Radiant Heaters *keep* them sold, and, what is equally important, keep gas heat sold. The superior design and workmanship result in sturdier wearing qualities and greater and more lasting heating efficiency. The pains taken with the construction, materials and positioning of all component parts of a Welsbach Radiant Heater assure absolutely dependable, complaint-free service. Every user of a Welsbach Radiant Heater becomes a booster for gas heating.

When the testing laboratories of gas companies report to their commercial departments that Welsbach Radiant Heaters, for all-around excellence, are superior to any other on the market, it's an endorsement to be proud of. And they're doing it every day!

No. 37 With Andirons
A new fireplace model, with header extending entirely to the top—an added advantage in practical utility and appearance.

No. 37 With Andirons and Wings
Both No. 37 and No. 39 (identical with No. 37 save for two additional glowers) come with or without andirons, wings and extension top.

No. 29
With Andirons
Has exposed copper reflector.

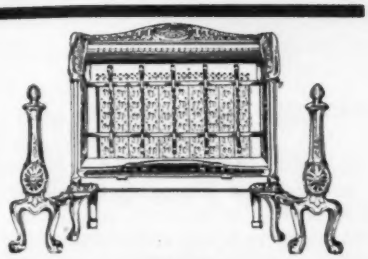
Welsbach Gas Heaters

Their unique method of producing and instantly distributing radiant heat gives to Welsbach Heaters many demonstrable advantages that readily make sales. Perfect service is assured by various exclusive features, each meaning much in added warmth, speed and convenience.

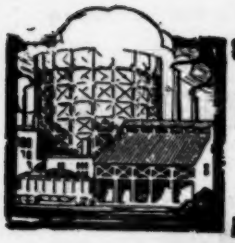
A self-lighter eliminates matches, and, with a header, provides for instant and complete ignition of all glowers. A metal reflector prevents waste and assures instant "pick-up." Perfect combustion is insured by a free flow of secondary air; a screen protecting burner openings from dust and lint; and rust- and corrosion-proof burner caps.

WELSBACH COMPANY GLOUCESTER CITY, N. J.

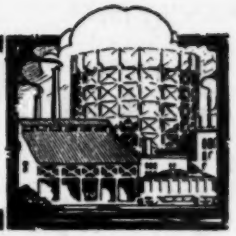
MEMBER AMERICAN GAS ASSOCIATION



No. 27
With Andirons
Massed glower effect.



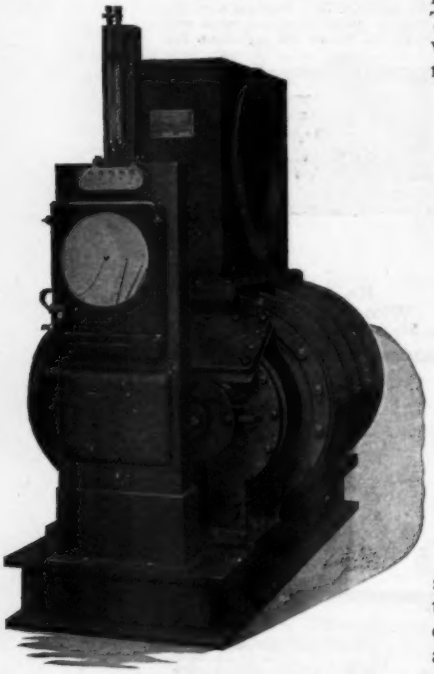
With The Equipment & Appliance Manufacturers



Improved Rotary Displacement Meter

The Connersville Blower Co., Connersville, Ind., has just issued Bulletin 4B, describing their Improved Displacement Meter. One of the most important improvements made in the present meter is in the method of mounting the bearings, which are placed in an easily accessible chamber at the ends of the impeller shafts. This location of the bearings, with several intermediate chambers between them and the cylinder of the meter, prevents them from being affected by impurities which may be present in the gas.

The meter is actuated by the flow of gas through it, but the resistance is so slight that only a very low differential between the



Connersville Station Meter

inlet and outlet is required to cause rotation of the impellers. This differential within the limits of speed for which the meters are usually recommended, does not exceed 1 in. water column, usually varying through a range of 1-10 in. to ¾ in.

The Bulletin gives a table of capacities and dimensions of their station meters, and a partial list of gas companies now using them. This meter was shown at the A. G. A. convention in Atlantic City in October. Copy of Bulletin will be sent on request.

Strip Chart Recorder

The American Schaeffer & Budenberg Corp., Brooklyn, N. Y., has just issued Bulletin 1,700. It describes their new Columbia Strip Chart Recorder, for recording temperatures and pressures. They are designed for applications where it is desirable to obtain a record of temperatures or pressures over an extended period of time and where the cycles of operation are of relatively short duration requiring a wide, open record enabling detection and study of the slightest variations.

Type No. 1700

For example, it is successfully used in connection with water gas sets in large gas plants, where it is employed to measure the ash-pit pressure of a water gas machine. This pressure is a very reliable indication of the operation of the entire gas set as, when recorded on a fast moving chart, it provides a complete picture of the cycle of operations, some of which cover a period of only half a minute, a complete cycle being usually completed in five to seven minutes. The record is sufficiently open to enable the superintendent to discover the slightest irregularity in the timing of the various valve changes, upon which depend the quantity and quality of gas made. A copy of the Bulletin will be mailed on request.

New Claus Thermostat

The Claus Automatic Gas Cock Co., Milwaukee, Wis., has announced the new Claus Thermostat, as shown in illustration. They state that it can be attached direct to the manifold of any gas range, thereby eliminating all piping. Made in one size for either right or left, 14-16 or 18-inch ovens. Priced so that all gas ranges can be equipped with a thermostat.